Claims

1. Magnetron coating system, comprising
   - A first coating source (5)
   - An auxiliary substrate (2) arranged between this first coating source and the area that is provided for receiving the substrate (1) to be coated
   - A magnetron (3), whereby the auxiliary substrate (2) forms a cathode for this magnetron
   - Means for determining the area density (6) of the auxiliary substrate (2).
2. Magnetron coating system according to claim 1, characterized in that the auxiliary substrate is embodied cylindrically and the magnetron is a rod cathode magnetron.
3. Magnetron coating system according to one of claims 1 or 2, characterized in that the first coating source is a planar magnetron.
4. Magnetron coating system according to one of claims 1 through 3, characterized in that the first coating source has a shield (4).
5. Magnetron coating system according to one of claims 1 through 4, characterized in that the means for determining the area density (6) contain a device for determining the x-ray fluorescence.
6. Magnetron coating system according to one of claims 1 through 5, characterized in that the magnetron (2, 3) has several cathodes, each of which contains an auxiliary substrate (2).
7. Method for depositing thin layers, in which a layer is deposited on an auxiliary substrate by means of a first coating source, and this auxiliary substrate is used as a cathode for coating a substrate by means of a magnetron and the area density of the auxiliary substrate is determined.

8. Method according to claim 7, characterized in that the deposited layer thickness on the auxiliary substrate is less than 100 nm.

9. Method according to claim 8, characterized in that the deposited layer thickness on the auxiliary substrate is less than 10 nm.

10. Method according to one of claims 7 through 9, characterized in that the deposited layer is a metal layer.

11. Method according to claim 10, characterized in that the metal layer comprises mainly an element that has a higher mass number than the average mass number of the material of the auxiliary substrate.

12. Method according to one of claims 7 through 11, characterized in that the operation of the first magnetron takes place with inert gas and the operation of the second magnetron takes place with inert and/or reactive gas.

13. Method according to claim 12, characterized in that the inert gas contains argon and/or the reactive gas contains nitrogen and/or oxygen and/or methane.

14. Method according to one of claims 7 through 13, characterized in that the area density is determined on the auxiliary target after this has been used as cathode for coating a substrate by means of a second magnetron.

15. Method according to one of claims 7 through 14, characterized in that the area density of the auxiliary target is determined by means of x-ray fluorescence.

16. Method according to one of claims 7 through 15, characterized in that the magnetron (2, 3) is operated with DC voltage or pulsed DC voltage.

17. Method according to one of claims 7 through 16, characterized in that the magnetron (2, 3) is operated as a magnetron having several cathodes with a frequency of approx. 10 kHz to approx. 100 kHz.

18. Method according to one of claims 7 through 17, characterized in that a layer is deposited on the substrate, which layer contains titanium dioxide.